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A Management Skills Workshop for Chief Residents

Neal Whitman, Ed.D.

Abstract—A needs assessment was used to plan a national workshop on management skills for chief residents. Of replies from 1,256 residency programs, 50 percent of the respondents reported a high likelihood of attending such a workshop. The three skills that the respondents considered should be given high priority in such a workshop were giving feedback, delegating duties, and building teamwork. Based on these responses, the author designed and conducted a two-day workshop in June 1987 that was attended by 180 chief residents from 138 programs in 21 specialties from 36 states. Each skill was taught by presenting a lecture and a small-group exercise to apply the skill; these small groups were led by trained faculty members. The participants rated the workshop as 4.21 (on a 5-point scale in which 5 = very helpful). The workshop will be offered annually.

Becoming a chief resident is an honor that is the culmination of hard work and demonstration of outstanding personal traits. However, the position requires managerial skills that residents have had little or no exposure to in medical school or residency training (1). Moreover, there are few programs available to teach management skills to residents once they are appointed chief resident. Some efforts are made at the annual meetings of program directors. For example, at the 1987 Annual Meeting of the Association of Program Directors in Internal Medicine, workshops for chief residents were offered on effective feedback and on the problem resident. In addition, some residency programs offer training to chief residents in the same specialty. For example, the Department of Psychiatry at the Albert Einstein College of Medicine of Yeshiva University conducts an annual workshop for psychiatry chief residents. A national workshop for chief residents in all specialties was conducted by the New York University School of Continuing Education Management in 1984 and 1985 but was canceled in 1986 due to low enrollment.

Based on the reported need to train chief residents to become more effective managers (2) but in the absence of a reported study of specific needs, the author conducted a needs assessment survey of residency directors and chief residents. According to Davis (3) a needs assessment serves at least four purposes: it gives a place to begin; it provides direction; it answers the question "why?"; and it authorizes continuation or gives permission to stop. The present author's needs assessment, reported here, fulfilled these purposes and authorized continuation; that is, it identified needs and justified developing a program to meet those needs.

Dr. Whitman is an associate professor, Department of Family and Preventive Medicine, University of Utah School of Medicine, Salt Lake City.

Needs Assessment

In January 1987 a questionnaire was sent to the 5,746 U.S. residency directors on a mailing list purchased from the American Medical Association. They were requested to complete the survey jointly with a chief resident. The survey asked respondents to rate the helpfulness for chief residents of 10 management skills and to identify which three of these skills should be given high priority in a workshop. They were also asked to suggest their own topics for such a workshop. In addition, the directors were asked to indicate the likelihood that they would send a chief resident to a national workshop and what they considered to be a fair tuition for a two-day program.

From this one mailing, 1,256 questionnaires were returned, a 22 percent response rate. Fifty percent of the respondents rated the likelihood that they would send a chief resident to a two-day management course for chief residents as likely or very likely (on a scale that ranged from 1 = not likely to 5 = very likely). The mean suggested tuition was $147.

Their ratings of the 10 suggested management skills are shown in Table 1 in rank order. A difference of .15 between any two means was statistically significant at the .01 level (Wilcoxon's matched pairs with the Bonferroni inequality). Analysis using a Manzel-Hansel chi-square showed that there was a statistically significant relationship between likeliness to attend and the mean rating or helpfulness for each skill except that of building teamwork in the residency program, which was rated very high for all levels of likeliness to attend.

Also shown in Table 1 is the percentage of respondents who identified each skill as a high priority for a two-day course. Not surprisingly, the three skills rated as most helpful also were identified by the most respondents as the top three priorities: giving feedback, delegating duties, and building teamwork. Again, statistical analysis was used to determine whether there was a relationship between likeliness to attend and the priority of each skill. Analysis using a Pearson's chi-square showed a significant relationship for only two of the 10 skills: delegating duties ($P \leq .01$) and writing letters and memos ($P \leq .002$). In general, while the respondents who reported they were less likely to attend rated the 10 skills as less helpful than did the other respondents, there was much agreement among all respondents over which skills should be given priority in a workshop.

With a 22 percent response rate, the

TABLE 1

Mean Ratings of Helpfulness of 10 Management Skills and the Percentage Identifying Each Skill as a High Priority of 1,256 Residency Directors and/or Chief Residents, 1987*

Skills	Mean†	Percentage Identifying Skill as High Priority‡
Giving feedback	4.36	42
Delegating duties	4.35	49
Building teamwork	4.35	52
Managing time	4.13	36
Making presentations	3.94	25
Making rounds	3.91	28
Coping with stress	3.88	23
Teaching at the bedside	3.69	17
Writing memos	3.54	9
Managing meetings	3.30	11

* The questionnaire was mailed to the 5,746 U.S. residency directors on a list of directors maintained by the American Medical Association. The respondents were told to complete the questionnaire jointly with a chief resident.

† Rated on a 5-point scale (5 = very helpful, 1 = not helpful).

‡ Respondents were asked to choose three of the 10 skills as high-priority skills to be taught in a workshop on management skills for chief residents.

results had to be used carefully. One concern was that those who responded were more likely to attend a management workshop than those who did not respond. Since there was a relationship between likeliness to attend and helpfulness ratings for nine of the 10 skills, the helpfulness rating of nonrespondents could be expected to be low based on the assumption that the nonrespondents would be unlikely to attend. On the other hand, it was useful to know that the respondents assigned similar priorities to the skills regardless of likeliness to attend. Based on these results, the author felt confident in selecting giving feedback, delegating duties, and building teamwork as the skills to be taught in a two-day course. The author had not anticipated the importance of team-building to the respondents and, without the needs assessment data, would not have given it importance in the course.

A second concern was that the author did not ask respondents to indicate whether the survey was completed jointly by the residency director and chief resident (as requested) or singly by only one of them. Such information could have been used to gauge the residency directors' and the chief residents' enthusiasm for a workshop.

As mentioned previously, respondents were asked to recommend skills to be taught in the workshop. Because many respondents recommended "conflict resolution," it was added to the workshop curriculum.

Workshop

The two-day workshop, entitled "Chief Residents as Managers," was sponsored by the University of Utah Medical Center in June 1987 and held in a hotel in Salt Lake City. The 180 participants were from 138 residency programs in 21 specialties from 36 states. The most represented specialties were internal medicine, 48; family medicine, 30; and surgery, 22. The stated conference goal was "to help residents become more familiar and comfortable with key principles of middle management so they will become more effective as chief or senior residents." The eight workshop objectives were that participants, as a result of the course, could more effectively identify their own strengths and weaknesses as managers, practice time management strategies, delegate work and give feedback, motivate others, cope with stress, resolve conflict in their programs, conduct clinical teaching, and build teamwork in their programs.

To achieve the first objective, the participants completed a "life orientation" survey developed by Atkins (4) to describe commonly preferred management styles. The survey is self-scoring and categorizes individuals into one (or a combination) of four management styles.

People who prefer a "supporting-giving" style (chosen by 37 percent of the participants) like to be seen as loyal team members and put emphasis on helping others. The "conserving-holding" style (chosen by 27 percent) describes those who like to be seen as reasonable and are systematic in their approach to people and problems. The "controlling-taking" style (chosen by 24 percent) describes people who like to be seen as competent and prefer to be in charge. People who prefer the "adapting-dealing" style (chosen by 13 percent) like to be seen as friendly and put emphasis on getting along with others and being flexible. At the participants' request, the survey results were analyzed overnight by specialty, and, as reported on the second day, there were no differences by specialty. Their high interest in this survey was

welcomed by the author, because the participants were asked to use their survey results throughout the workshop.

The basic method for the course was presentation of information on a management skill (for example, time management) in 45 minutes followed by a 60-minute small-group exercise on applying the skill. The participants were assigned by specialty to the same group with the same faculty leader for two days. Faculty leaders from the author's medical school were trained to conduct specific activities for each small-group exercise. For example, in the small-group exercise on time management, each participant completed a personal time management action plan, and then all discussed the individual plans.

Medical school faculty members rather than management experts were chosen to lead the small-group discussions. Since the purpose of the group exercises was to apply basic management principles already explained in the preceding lecture and to discuss the realities of residency training, group leaders familiar with residency programs were preferred. However, the faculty members were chosen on the basis of their administrative experience. For example, of the 10 group leaders, one was a department chairman, one was a vice chairman, and two were former chief residents; and a non-M.D. was the host medical center's director of graduate medical education.

In the workshop orientation, the willingness of participants to apply the skills and work in their groups was emphasized as the key to the success of the workshop. Full attendance at small groups was maintained until the last group activity on the second day; attendance at that final group session was 75 percent; and the group leaders reported that most absentees had left because of their travel plans.

Evaluation

The participants were surveyed at the end of the workshop. A 5-point scale (5 = very helpful, 1 = not helpful) was used to rate each lecture and small-group exercise; the results are shown on Table 2. The mean rating for the overall program was 4.21. No participant rated the overall

TABLE 2

Mean Ratings and Number of 180 Participants Rating Each of Six Workshop Components and the Program Overall Following a Workshop on Management Skills for Chief Residents, Sponsored by the University of Utah Medical Center, June, 1987*

Activities	Mean	No.
Component 1		
Lecture: Developing a game plan	4.35	121
Lecture: Managing time effectively	4.42	117
Small-group exercise	3.79	118
Component 2		
Lecture: Delegating work and giving feedback	4.23	120
Small-group exercise	3.83	120
Component 3		
Lecture: Motivating others	3.95	119
Lecture: Coping with stress	3.58	121
Small-group exercise	3.67	120
Component 4		
Lecture: Resolving conflict	3.91	121
Small-group exercise	3.63	120
Component 5		
Lecture: Clinical teaching	3.69	121
Small-group exercise	3.65	114
Component 6		
Lecture: Team building	3.83	106
Overall program	4.21	117

* Activities were rated on a 5-point scale ranging from 5 = very helpful to 1 = not helpful. A total of 180 chief residents participated, but not all completed the evaluation questionnaire or answered all questions.

program as 1 or 2, and only 14 rated it as 3.

The participants and the small-group leaders recommended that the activities planned for small-group exercises be more flexible. It was suggested that group leaders begin by asking participants to comment on the lecture and then to use the planned exercises after the participants' concerns had been addressed.

Ongoing feedback from the participants during the workshop was largely positive, and a group consensus was informally formulated that the participants would recommend the conference to their successors.

Conclusion

Based on a needs assessment survey, the author planned a two-day workshop addressing the residency directors' and chief residents' perceived needs. The evaluation results suggested that the participants had high satisfaction with the workshop, and the author plans to improve the workshop and offer it annually.

Since many chief residents pursue careers that require effective management, course work in management skills might be helpful. Perhaps one course should be offered just prior to the chief residency year and another course at the end of the year. The purpose of this second course would be to consolidate management skills practiced during the year and introduce additional skills.

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dents have represented minority groups (such as those defined by the Association of American Medical Colleges), rural residents, veterans, and educationally disadvantaged individuals. Some of these students were considered high-risk participants because of the large improvements needed in their academic records. In the supportive environment of the program, the students worked to earn better grades in college, receive higher MCAT scores, and develop appropriate skills for professional school. Of those admitted to professional school, 87 percent had graduated from or were in school.

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Career Preferences, Career Decision-Making, And Orientation Toward Medicine Among Third-Year Students

Linda Z. Nieman, Ph.D., Donald Holbert, Ph.D., and C. Christopher Bremer, M.D.

Previous studies regarding the selection of family medicine (FM) as a career focused upon sociodemographic factors, personality factors, attitudes, and clinical experiences that influence decisions (1–3). Seeking to overcome the lack of a theoretical framework in such studies, the present authors in 1984 conducted research (4) that applied the theories of Janis and Mann (5), Funkenstein (6), and Matteson and Smith (7) in an investigation of career decision-making among first-year medical students. The purpose of the present study was to use theories found useful in that earlier study of first-year students to measure and describe career decision-making among third-year students.

The research reported in this paper was funded by grant NC6RS from the Family Health Foundation of America, Kansas City, Missouri, and by a grant from the North Carolina Academy of Family Physicians, Raleigh, North Carolina.

Dr. Nieman is section head for education and Dr. Bremer is director of undergraduate education, Department of Family Medicine, School of Medicine; and Dr. Holbert is associate professor of biostatistics/epidemiology, School of Allied Health; all are at East Carolina University, Greenville, North Carolina.

Materials and Methods

The population sample consisted of 429 third-year medical students at North Carolina's four medical schools: East Carolina University School of Medicine, Bowman Gray School of Medicine of Wake Forest University, Duke University School of Medicine, and the University of North Carolina at Chapel Hill School of Medicine.

A career preference questionnaire, similar to the one used to examine the decision-making of first-year medical students (4), was administered late in April 1985. The authors sought to answer the following questions: Was there a difference in orientation toward medicine (that is, orientation toward research, prevention, or patient care) of third-year medical students preferring FM and those preferring other specialties? Did FM students differ from others in their stage of decision-making? When, in comparison with other students, did FM students first prefer their specialty, and how consistent was that preference? Did students who prefer FM differ from other students in the thoroughness and logic of their career decision?

Results and Discussion

The total number of respondents was 251 (59 percent). The response rates for individual schools were: Bowman Gray, 51 percent; Duke, 69 percent; East Carolina, 92 percent; and North Carolina, 46 percent. Sixty-nine percent of the respondents were male, a percentage similar to that of all 1986 graduates, as reported on the 1986 graduation questionnaire of the Association of American Medical Colleges.

The students' basic orientation toward medicine was identified as "bioscientific" (desired primarily to be a scientist who helps people using a high degree of scientific knowledge), "biosocial" (desired primarily to work directly with people, being of service to them and treating their illnesses using science pragmatically), and "mixed." Second, they were classified as preferring FM or preferring other areas. And, third, they were also classified into five phases of decision-making: phase 1—having always been sure of their career preferences; phase 2—recently confused by new information; phase 3—seeking new information about options; phase 4—narrowing down the final few choices; and phase 5—confident that their choice would not change.

A total of 38 students (15 percent) preferred FM. Orientation toward medicine was strongly related to specialty preference (chi-square = 11.6, df = 4, $p = .02$). The biosocial orientation toward medicine was more common among those who preferred FM than among those who preferred other specialties. Specialty choice was not associated with phase of decision-making (chi-square = 5.3, df = 4, $p = .26$). The biggest difference between the FM group and the non-FM group with respect to phase of decision-making was that 26 percent of the FM group was at phase 1, whereas only 15 percent of the non-FM group was at phase 1.

Two analyses were performed regarding the time at which preferences were made and the consistency of those preferences; the findings are presented in Table 1. Those students preferring FM tended to have first considered their specialty earlier than those preferring other specialties and had maintained their specialty preference from an earlier stage in medical school than had their classmates who preferred other specialties.

The vigilance or thoroughness with which the students conducted their decision-making was studied by conducting three analyses, namely, the association of (*a*) the number of information sources consulted when making career decisions with the degree of commit-

TABLE 1

Percentages of 251 Third-Year Students at the Four North Carolina Medical Schools Who Stated When They Had First Considered Their Preferred Specialty and How Long Their Preference Had Persisted During Medical School, by Specialty Preference, 1985

Factors	Preferences*	
	Family Medicine ($n = 38$)	Other Specialties ($n = 213$)
Specialty first considered		
In high school	31	10
In college	22	21
In graduate or medical school	47	69
Specialty preferred since		
Medical school year 1	61	36
Medical school year 2	13	23
Medical school year 3	26	41

* Summary statistics for the differences were: specialty first considered (chi-square = 13.9, df = 2, $p = .01$) and persistence of preference (chi-square = 8.0, df = 2, $p = .02$).

ment to the preferred specialty, (*b*) the number of specialties ruled out with the degree of commitment to the preferred specialty, and (*c*) the number of information sources consulted with the number of specialties ruled out. These analyses were conducted separately for the FM group and the non-FM group. Both the number of information sources consulted and the number of specialties ruled out were classified as zero, one, two, three, four, or at least five. Degree of commitment was classified as low (less than 75 percent committed) or high (at least 75 percent committed). The degree of association was evaluated in each case using a chi-square contingency table analysis. For non-FM students, the results showed that the greater the number of sources consulted and the greater the number of specialties ruled out, the more committed the students were to their preferred specialty. This finding could suggest that the non-FM students exhibited more vigilance in their decision-making than did their classmates who prefer FM. Although no associations were statistically significant for the FM group, the same tendencies toward positive associations were present in the data.

Differences in orientation toward medicine were less pronounced among these third-year students than among the first-year students studied previously (4). This finding may reflect the fact that research is emphasized less during the clinical years than during the preclinical years. It also may reflect the current small percentage of students who eventually select basic science, research-oriented careers.

As noted above, there were no differences in phases of decision-making between third-year medical students preferring FM and those preferring other specialties. A greater percentage of FM students than non-FM students apparently do not pass through the sequential phases of decision-making. Rather, they apparently move directly from phase 1 (never having considered alternatives) to phase 5 (being sure they will not alter their decision). This finding reflects Janis and Mann's (5) explanation that phase 1 and phase 5 are alike for less vigilant decision-makers.

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DATAGRAM

Results of the NRMP for 1988

The number of U.S. seniors who enrolled in the National Resident Matching Program (NRMP) in 1988 increased by 47 from a year ago (1) but was 403 less than in 1985 (2). The number who subsequently withdrew increased by 14 over 1987 (Table 1), but the number of active applicants increased by 33. The number who were unmatched increased by 133.

The total number of U.S. and Canadian students (U.S. seniors, "fifth pathway" students, physician candidates [earlier U.S. graduates who are seeking a position in graduate medical education], and osteopathic and Canadian graduates but excluding U.S. foreign medical graduates [FMGs]) who applied to the match this year increased by 319. The number of "fifth pathway" applicants decreased from 210 to 163; 128 participated in the match, and 84 percent were successful. The number of graduates of osteopathic schools who initially applied to the match increased by 31 percentage points to 1,158, over a fourfold increase since 1983; 68 percent were matched. The number of physician applicants increased by 2 percentage points, and 46 percent were successful in the match.

The number of U.S. citizen-FMGs who applied decreased by 66 to 1,535, only slightly more than half of the number in 1984; 49 percent of the active participants successfully matched in 1988, an increase of 6 percentage points over 1987. The number of alien FMGs decreased by 8 percent to 4,089, and the percentage matched increased by 10 percentage points to 44 percent.

The number of positions offered for the first postgraduate year (PGY-1) increased by 466; 252 more were offered in the generalist* specialties than in 1987 (Table 2), a decrease of 0.3 percentage points to 65.4 percent of all positions. The ratio of positions per initially-enrolled applicant was 0.8, an increase of 0.1; that of positions per all U.S. senior, other U.S.-Canadian citizen applicant, and U.S. FMG was 0.9; and that per U.S. senior was 1.2. The ratios for active applicants in the match were, respectively, 1.0, 1.1, and 1.3.

The overall filling of PGY-1 positions decreased by 1.5 percentage points and the filling of positions by U.S. seniors by 2.2 percentage points. The number of U.S. seniors who matched in family practice decreased by 234. Psychiatry attracted 70 more seniors than last year. The most competitive programs were again in emergency medicine, obstetrics/gynecology, orthopedic surgery, and radiology. The participation of programs and positions in psychiatry, orthopedic surgery, emergency medicine, and diagnostic radiology increased considerably. The low number of positions in neurological surgery, otolaryngology, and urology is attributable to the withdrawal of many programs in order to participate in non-NRMP matches. Only a few programs in plastic surgery again participated in the match. The distribution of matched U.S. seniors among types of programs increased in internal medicine (preliminary and primary care tracks), obstetrics/gynecology, psychiatry, and orthopedic surgery, but the percentage of the class entering family practice and general surgery decreased.

(The total number of applicants matched for internal medicine positions in 1987 was 5,827 rather than 5,327 as listed a year ago [1].)

An increased number of advanced programs for students (PGY-2 positions) were offered in the match this year; 282 programs offered 1,359 positions, 67 percent of which were filled by 913 U.S. seniors and 75 percent by a total of 1,012 applicants. A total of 111 programs in diagnostic radiology offered 407 PGY-2 positions, of which 77 percent were filled with

*"Generalist" specialties are defined as family practice, internal medicine, obstetrics/gynecology, and pediatrics.

TABLE 1
Participation in the National Resident Matching Program in 1988

Category	U. S. Senior Students		Other U.S. and Canadian Students*		U.S. Foreign Graduates		Foreign-Born Foreign Graduates		Total Applicants	
	No.	Percent	No.	Percent	No.	Percent	No.	Percent	No.	Percent
Total applicants	15,776	100.0	3,368	100.0	1,535	100.0	4,089	100.0	24,768	100.0
Withdrew	1,277	8.1	1,616	48.0	515	33.6	1,552	38.0	4,960	20.0
Active participants	14,499	91.9	1,752	52.0	1,020	66.4	2,537	62.0	19,808	80.0
Matched	13,496	93.1	1,004	57.3	500	49.0	1,119	44.1	16,119	81.4
Unmatched	1,003	6.9	748	42.7	520	51.0	1,418	55.9	3,689	18.6
Total	14,499	100.0	1,752	100.0	1,020	100.0	2,537	100.0	19,808	100.0

* Other U.S. and Canadian students consist of graduates from U.S. osteopathic schools and Canadian medical schools; physician candidates, that is, earlier U.S. graduates seeking a position in graduate medical education; "fifth pathway" students, who are U.S. nationals who completed course requirements for a medical degree abroad followed by a year of clinical training in a U.S. hospital under medical school sponsorship.

U.S. senior students and 14 percent with physician applicants for a total filling of 91 percent. A total of 109 programs in anesthesiology offered 723 positions, of which 64 were filled with U.S. senior students and 3 percent with other applicants for a total filling of 67 percent. Ninety percent of the senior students matched to PGY-2 positions were also matched to PGY-1 positions in the match.

In the 1988 match, 776 individuals participated in 388 couples; 91 percent of these U.S. students were successfully matched.

Several specialty matches for physician candidates were carried out by the NRMP in 1987. In the fall, 24 programs offered 48 positions in colon and rectal surgery; 94 percent were filled by 57 percent of the applicants. Late in the fall, 20 programs in emergency medicine offered 119 positions; 97 percent of them were filled by 46 percent of the physician applicants. In the specialty match for dermatology last fall, there were 515 applicants for 206 positions. A total of 205 (40 percent) physicians were matched to fill 99 percent of the positions. In June 1987, 54 programs offered 77 positions in thoracic surgery. Of them, 86 percent were filled with 66 applicants (62 percent). In the fall, 36 vascular surgery programs offered 44 positions, of which 98 percent were filled with 43 (43 percent) of the applicants.

The Medical Specialties Matching Program (MSMP) took place last June for fellowships in all of the subspecialties of internal medicine for positions to begin in July 1988. The number of participating programs was 1,024 in 16 subspecialties that offered 2,240 positions, Seventy-seven percent of these positions were filled by 1,730 applicants, who represented 72.2 percent of the active applicants.

A new Rank Order List Input and Confirmation System was used this year. Under this system, the medical schools and teaching hospitals entered and confirmed their rank order lists at some 500 sites. Access to an entry site was not available for 2,711 applicants; they sent NRMP paper rank order lists.

Data that describe the trends in numbers of positions offered and filled by U.S. seniors and other applicants during the past several years

TABLE 2

Postgraduate-Year-One Positions Offered and Filled by Specialty and Type of Applicants in the NRMP in 1988

Specialty	Positions Offered		Applicants Matched											
			U.S. Senior Students			Other U.S. and Canadian Applicants‡			Foreign-Born Foreign Graduates			Total Applicants		
	No.	Percent*	No.	Percent		No.	Percent		No.	Percent		No.	Percent	
				*	†		*	†		*	†		*	†
Family practice	2,412	12.4	1,494	11.1	61.9	230	15.3	9.5	43	3.8	1.8	1,767	11.0	73.3
Internal medicine	7,272	37.3	4,846	35.9	66.6	562	37.4	7.7	652	58.3	9.0	6,060	37.6	83.3
Pediatrics	2,036	10.4	1,313	9.7	64.5	162	10.8	8.0	184	16.4	9.0	1,659	10.3	81.5
Obstetrics/gynecology	1,043	5.3	903	6.7	86.6	68	4.5	6.5	10	0.9	1.0	981	6.1	94.1
Psychiatry	1,097	5.6	745	5.5	67.9	109	7.2	9.9	78	7.0	7.1	932	5.8	85.0
Medical specialties	69	0.4	48	0.4	69.6	4	0.3	5.8	6	0.5	8.7	58	0.4	84.1
Dermatology	7	0.0	6	0.0	85.7	0	0.0	—	1	0.1	—	7	0.0	100.0
Neurology	42	0.2	24	0.2	57.1	3	0.2	7.1	5	0.4	11.9	32	0.2	76.2
Ophthalmology	20	0.1	18	0.1	90.0	1	0.1	—	0	0.0	—	19	0.1	95.0
General surgery	2,270	11.6	1,647	12.2	72.6	140	9.3	6.2	48	4.3	2.1	1,835	11.4	80.8
Surgical specialties	601	3.1	538	4.0	89.5	41	2.7	6.8	0	0.0	0.0	579	3.6	96.3
Neurosurgery	30	0.2	24	0.2	80.0	0	0.0	0.0	0	0.0	—	24	0.1	80.0
Orthopedics	439	2.2	402	3.0	91.6	36	2.4	8.2	0	0.0	—	438	2.7	99.8
Otolaryngology	49	0.3	42	0.3	85.7	1	0.1	2.0	0	0.0	—	43	0.3	87.8
Urology	77	0.4	64	0.5	83.1	4	0.3	5.2	0	0.0	—	68	0.4	88.3
Plastic surgery	6	0.0	6	0.0	100.0	0	0.0	—	0	0.0	—	6	0.0	100.0
Support Specialties	1,449	7.4	1,017	7.5	70.2	136	9.0	9.3	49	4.4	3.4	1,202	7.5	83.0
Anesthesiology	270	1.4	219	1.6	81.1	8	0.5	3.0	8	0.7	3.0	235	1.5	87.0
Emergency medicine	326	1.7	278	2.1	85.3	44	2.9	13.5	1	0.1	0.3	323	2.0	99.1
Pathology	443	2.3	184	1.4	41.5	31	2.1	7.0	37	3.3	8.4	252	1.6	56.9
Physical medicine	78	0.4	73	0.5	93.6	2	0.1	2.6	1	0.1	1.3	76	0.5	97.4
Preventive medicine	7	0.0	4	0.0	57.1	0	0.0	—	1	0.1	14.3	5	0.0	71.4
Diagnostic radiology	313	1.6	252	1.9	80.5	50	3.3	16.0	1	0.1	0.3	303	1.9	96.8
Therapeutic radiology	9	0.0	7	0.1	77.8	0	0.0	—	0	0.0	0.0	7	0.0	77.8
Nuclear medicine	3	0.0	0	0.0	0.0	1	0.1	33.3	0	0.0	0.0	1	0.0	33.3
Transitional	1,264	6.5	945	7.0	74.8	52	3.5	4.1	49	4.4	3.9	1,046	6.5	82.8
Total	19,513	100.0	13,496	100.0	69.2	1,504	100.0	7.7	1,119	100.0	5.7	16,119	100.0	82.6

* Percent distributions of positions offered and filled among specialties (percentages may not add to 100 due to rounding).

† Percent of positions offered in specialty that were filled by applicants.

‡ This category consists of those students listed in the footnote to Table 1 plus U.S. foreign medical graduates.

are included in the NRMP's annual directories (3).

JOHN S. GRAETTINGER, MD., *executive vice president, National Resident Matching Program, and professor of medicine (emeritus), Rush Medical College, Chicago.*

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